

Category: Ocean Going Vessels

An ocean-going vessel (OGV) is a commercial ship greater than or equal to 400 feet in length or 10,000 gross tons; or propelled by a marine compression ignition engine with a displacement of greater than or equal to 30 liters per cylinder. The emissions inventory includes all OGV emissions occurring within 100 nautical miles of the California coastline.

The types of ocean going vessels in this category include:

Type	2004 Visits
Auto Carrier	1140
Bulk Cargo	1681
Container	8009
General Cargo	774
Passenger	1083
Reefer	439
Roll-on Roll-Off	386
Tanker	3006

Some of these ships visit California many times in a given year. In 2004, 1,962 unique OGVs visited California ports. Container ships visit most often, followed by tankers, bulk cargo ships, auto carriers, and passenger ships.

Emissions Inventory:

The emissions inventory for ships are calculated as the product of time in mode (hours), engine power (kilowatts), load factor, and emission factor (grams per kilowatt-hour). The three operation modes are transit (operations at sea), maneuvering (moving into or out of port), and hotelling (operations while stationary at dock).

The existing emission inventory is documented in Appendix D of the Auxiliary Engine Regulation: [\(Document Link\)](#)

For the current emissions inventory (tons/day):

[Air Resources Board Almanac](#)

Input Data Sources:

The input factors used by the OFFROAD Model come from various data sources:

Input Factor	Source of Data (Diesel)
Population (base year 2004)	California State Lands Commission
Main Engine Power	Port of Los Angeles Emission Inventory (2004)
Auxiliary Engine Power	ARB Ocean Going Vessel Survey (2004)
Main Engine Load Factor	Port of Los Angeles Emission Inventory (2004)
Auxiliary Engine Load Factor	ARB Ocean Going Vessel Survey (2004)
Vessel Speed	Port of Los Angeles Emission Inventory (2004)
Transit Time	Army Corps of Engineers National Waterway Network
Maneuvering Time	Port of Los Angeles Emission Inventory (2004), Port Authorities
Hotelling Time	ARB Ocean Going Vessel Survey (2004)
Emission Factors	Entec (2002) and ARB Staff.

For more additional background information on the input factors used for the Ocean Going Vessel inventory: [\(Document Link\)](#)

Adopted Regulations for Ocean Going Vessels:

2005: Board approved a regulation requiring vessels with auxiliary engines to switch from heavy fuel oil to marine distillate within 24 nautical miles of California.

Future Improvements to the Ocean Going Vessels Inventory:

The emissions inventory for ocean-going vessels is a bottom up inventory. However, vessel power, maneuvering times, and hotelling times are estimated based averages contained in the Port of Los Angeles emission inventory.

- Obtain Port-specific hotelling and maneuvering times from Port Authorities and Marine Exchanges
- Obtain vessel specific information using commercial databases
- Update population and activity values as new data becomes available
- Revise growth factors using most recent vessel activity data
- Use Dr James Corbett's spatial allocation data to determine transit distances and to spatially allocate emissions in the Outer Continental Shelf.